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ALLERGIC REACTIONS IN SALMONELLOSIS DEPENDS ON THE SEROTYPE OF PATHOGENS

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Allergic reaction – IgE – Salmonella – serotype

BACKGROUND: Intestinal infectious diseases remain a serious problem for the health care. In many countries, especially in Armenia, the most common intestinal infection is salmonellosis, which is caused by various serotypes of Salmonella. It is the most common causative agent of food-borne diseases. Although the members of the *Salmonella* genus are genetically close, they display wide variations in host-specificity, virulence, and disease manifestations. Gastroenteritis is most frequently caused by Salmonella enterica serovar Typhimurium (*S. Typhimurium*) and *Salmonella enteric* serovar *Enteritidis* (*S. Enteritidis*). Previously, we reported that the induction of the cytokine network and an antimicrobial protein is serotype-specific and also depends on the disease stage. Differential genomic context of the serotypes may explain the differential induction of inflammatory responses. Recent studies have indicated that bacterial infections in early life may help to inhibit excessive allergic Th2 reactions by angling the immune system towards Th1 responses. However, it is known that infections can also cause the exacerbation of allergic reactions. Skewing of response away from Treg cells may lead to the onset and/or progression of autoimmune diseases in humans. It is also thought that there is a high probability that infectious gastroenteritis increases the risk of subsequent autoimmune and allergic diseases.

OBJECTIVES: To reveal the inflammatory reactions caused by different *Salmonella* serotypes leading to allergic reactions.

MATERIALS AND METHODS: The study groups included patients with salmonellosis admitted to the hospital of infectious diseases "Nork" in Yerevan, RA. The study involved a total of 30 patients with acute salmonellosis caused by *S. Typhimurium* (n=11) and *S. Enteritidis* (n=19). The study was performed on three age groups (less than 4 years old, 4-7 years old, and more than 10 years old). Diagnosis was based on clinical presentations and laboratory analyses. Concentrations of IgE in the serum samples were determined with the cobas-e411 analyzer ("Roche", USA) according to the manufacturer's protocols. The control for the first, second and third groups was 60, 90, and 100 IU/ml, respectively.

RESULTS: The concentration of IgE was higher in patients infected with *S. Enteritidis* compared to control, while in patients infected by *S. Typhimurium* it was lower than in control. Thus, the level of IgE was substantially higher in patients infected with *S. Enteritidis* compared to patients infected with *S. Typhimurium*. In our survey the concentration of serum IgE in acute disease was consistently high in all age groups infected with *S. Enteritidis*, exceeding the control values by 1.5-3 fold. Moreover, the comparative analysis in the age group of less than 4 years old revealed a statistically significant four-fold increase of IgE in patients infected with *S. Enteritidis* compared to patients infected with *S. Typhimurium* (p=0.03).

CONCLUSIONS: Acute salmonellosis caused by two different serotypes of *Salmonella* results in different IgE concentrations, which are significantly different between the serotypes as well as compared to control.